December Feature Article

New Jersey Going Green: An Industry Overview

by Tiffany Smith, Division of Labor Market & Demographic Research

"Going Green" is one of New Jersey's highest priorities. From renewable energy standards in law or state policy, to the need to clean up older industrial and Super Fund sites; from the movement to local sustainable agriculture, to the tremendous need for weatherizing older housing stock in the State, there is a strong and growing demand for green products and services. In October 2008, New Jersey's Energy Master Plan (EMP) was created to guide the development of the state's green energy infrastructure. The EMP targets a 20.0 percent decrease in energy consumption by 2020. It also projects the creation of approximately 20,000 jobs during the same period, due in large part to a $33 billion infrastructure investment. At the national level, the American Recovery and Reinvestment Act of 2009 includes $500 million for training related to careers in the energy efficiency and renewable energy industries. These important measures mean that it is crucial to have an accurate profile of the green industry in New Jersey today.

This article provides a snapshot of the current status of green industries in New Jersey. It profiles "potentially green" industries, which are those with a significant proportion of activities related to the green economy. In addition, a brief regional analysis highlighting the green industry strengths in northern, central, and southern New Jersey is presented. This article summarizes the more detailed analysis from the October 2009 report "New Jersey Going Green".

Overview of New Jersey's Green Industry

There is a vast body of literature available on the green industry today. This article is based on a synthesis and application of the most widely accepted green industry definitions, which were adapted to reflect New Jersey. In New Jersey, green industries are grouped into four major sectors: 1) energy efficiency, 2) renewable energy, 3) waste reduction and management, and 4) transportation.

Energy efficiency includes industries that build and/or install systems designed to reduce energy consumption at the residential, commercial and industrial levels. Some of the industries in this group are concerned with retrofitting current residential, commercial, and industrial buildings to make them more efficient. Others construct new green buildings. Also included in this sector are industries that install renewable energy devices, such as solar panels or geothermal heating systems at residential, commercial, and industrial sites.

Renewable energy includes industries that design and manufacture renewable energy technologies, such as solar energy, wind energy, photovoltaic technologies, wind turbines, fuel cells, geothermal technologies, cogeneration, wave or tidal action, biofuels, and bio-mass. The industries in this sector are mainly classified in the manufacturing and professional and technical services sectors.

Environmental remediation includes industries related to recycled goods, waste reduction, and water treatment. The industries are mostly administrative support and waste management and remediation services; however, there are also wholesale industries in this group.

Transportation encompasses mass transit systems and ports. This industry is included for three reasons: first, an increase in demand for mass transit will result in less energy consumption and carbon emissions by personal cars; second, transit systems across the nation are involved in major developmental projects to implement more clean energy technologies; third, many of the ports are integral to the installation of off-shore power systems.

Employment in Green Industries

There are approximately 20,000 companies in New Jersey that are either already performing green functions or may become green, whether through the implementation of clean/green technologies or through producing green technologies, goods, or services. Combined, these industries employ almost 192,000 workers, which is five percent of New Jersey's total employment (Table 1). Some of these companies are producers of green/clean energy, while others are major current/potential consumers of green industry outputs. The remainder of the analysis focuses on energy efficiency and renewable energy industries because they comprise 90 percent of all green employment.

Table 1

Employment in New Jersey's Green Industries
Average Annual Employment, 2009

Green Industry		Number Of Firms	Average Annual Employment	Share Of Total Green Employment
Energy Efficiency	Building Installation	8,735	60,857	30.4%
	Residential Construction	7,268	24,905	12.4%
	Commercial And Industrial Construction	1,138	12,712	6.3%
	Building And Equipment Manufacturing	122	3,885	1.9%
	Total, Energy Efficiency	**17,263**	**102,359**	**55.3%**
Renewable Energy	Biofuel Energy	158	7,082	3.5%
	Solar Energy	453	14,247	7.1%
	Wind	439	12,501	6.2%
	Thermal, Hydraulic And Other Renewable Energy	1,127	30,550	15.2%
	Total, Renewable Energy	**2,177**	**64,381**	**32.1%**
Environmental Remediation		**1,250**	**17,428**	**8.7%**
Transportation		**75**	**7,713**	**3.8%**
Total, All Green Industries		**20,764**	**191,888**	**100%**

Source: New Jersey Department of Labor and Workforce Development

Energy Efficiency

The energy efficiency sector accounts for more than half of the employment in New Jersey's green industries (about 102,000 jobs). Retrofitting existing buildings to become energy efficient and adding solar panels is currently the largest subcomponent in this sector. Fifty-nine percent of energy efficiency employment (over 60,000 jobs) is in the building installation industry. The 37,000 jobs in the residential and nonresidential construction industries are also becoming increasingly green. Another important green element is related to the manufacturing of greener, more energy-efficient equipment, including refrigerators, laundry equipment, etc.

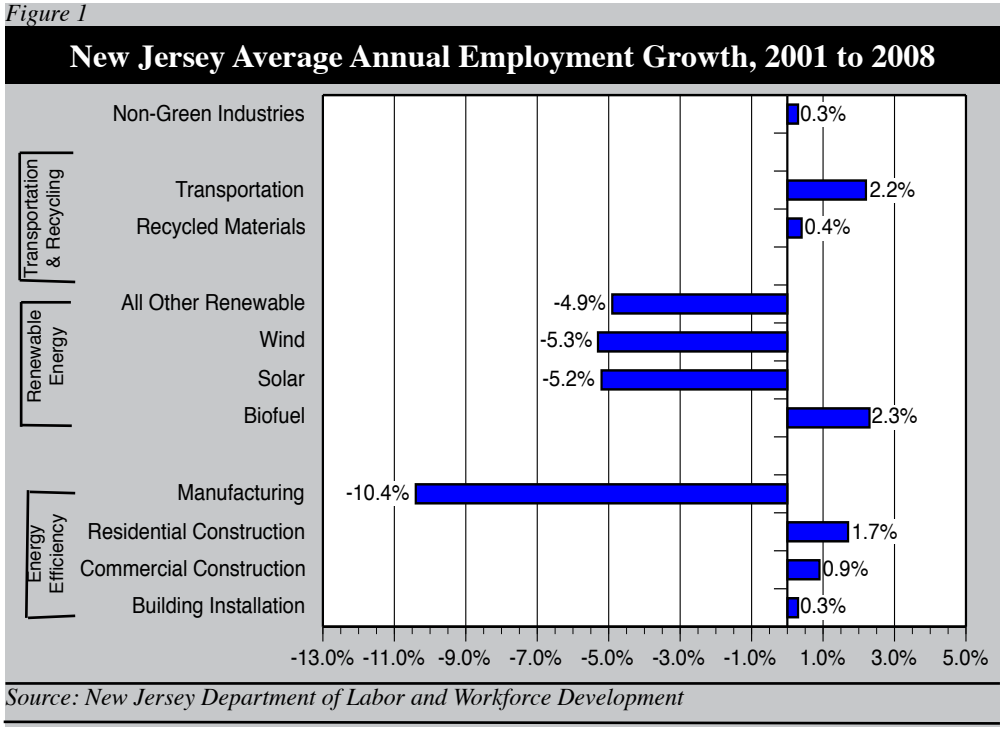
Renewable Energy

Almost one-third of employment in New Jersey's green industries is in renewable energy; over half of this (almost 34,000) is distributed among biofuels, solar, and wind-related manufacturing. The production of other renewable resources (e.g., thermal, hydraulic) is a small but significant component in the green industry, currently employing about 31,000 workers, or 15 percent of total green employment in New Jersey. The comprehensive incentives designed in support of the Energy Master Plan are expected to significantly boost employment in these jobs. Most of the companies in the renewable energy sector are manufacturing companies producing products that are currently not green, such as plastics material, glass, copper wire, metal manufacturing, industrial fans, etc. Manufacturing employment has been on a decades-long downward trend, but that pace has accelerated over the course of the recession. The green economy, however, will create new opportunities for rejuvenating the manufacturing industry in New Jersey. Many of these companies will be incorporated into the extensive supply chain of the wind, solar, and biofuels energy production.

Employment Growth

Figure 1 depicts data on the average annual growth in the various green sectors between 2001 and 2008 and compares these growth patterns with that in all other industries. Significant growth was recorded in the biofuels and transportation sectors. Residential and commercial construction have also been growing. While infrastructure construction has been declining, this industry is expected to be targeted by both the state and federal recovery investments, which in turn should increase employment in this sector over the next five to ten years.

Figure 1



Source: New Jersey Department of Labor and Workforce Development

Regional Strengths

This section identifies the geographic specialization of green industries in the Northern, Central, and Southern regions of New Jersey. These specializations mean that the area has a disproportionately large share of a particular industry relative to the state as a whole and therefore has strengths or competitive advantages in that industry.

Northern Region

The eight county Northern Region includes Warren, Sussex, Morris, Bergen, Passaic, Essex, Hudson, and Union counties. Almost half of the state's total employment (46 percent) is in the Northern Region. The region has a strong energy efficiency manufacturing sector with about 63 companies employing over 2,000 workers. These firms manufacture building products or equipment for houses that consume a large amount of energy (light bulbs, refrigerators, laundry equipment) and which will become green(er) as the products they manufacture become more energy efficient.

Central Region

The Central Region includes Ocean, Monmouth, Somerset, Hunterdon, Middlesex, and Mercer counties. This region accounts for slightly less than one-third of the state's total employment. The employment patterns in the Central Region demonstrate a high level of specialization in the renewable energy sector overall. The sector size is 27,000 jobs, which is 42 percent of the state's renewable energy sector employment. Specific strengths were demonstrated in the wind subsector (relative employment share is 20 percent higher than the state). Although making up only one percent of total employment, the share of thermal, hydraulic, and other renewable energy industries in the central region's total employment was 60 percent higher than the state. All these industries depend heavily on research and development, which is among the region's greatest strengths given the high concentration of research institutions.

Southern Region

The Southern Region includes Atlantic, Cape May, Salem, Cumberland, Gloucester, Camden, and Burlington counties and holds less than one-fifth of the state's total employment. This region has a large relative employment share in the solar energy subsector, for which the Southern Region accounts for almost one-third of the total state employment. Analysis demonstrates significant regional specialization in both solar manufacturing and in the biofuels industry. Biofuels includes ecosystems and agricultural products, which have received some attention from the Southern Region's workforce system. Among the energy efficiency subsectors, building installation and commercial/industrial construction also have specialization in the region.

Conclusion

While the emergence of green industries in New Jersey is off to a promising start, it is important to note that the green economy involves extensive transformation in building and production models across all industries. Moving forward, more industries will become green. In addition, although the regional analysis focused on three distinct geographic areas, it is also true that the geographic concentrations of the green energy subsectors cross county and region-

al boundaries. It is important to capitalize on the specific strengths and policy infrastructure that were developed by the various local areas without ignoring the existing strengths in other areas. Lastly, there is also overlap in the green subsectors identified above. Some of the inputs in the solar energy subsector are also inputs in other renewable energy industries. Furthermore, each of the energy sectors identified in the analysis has production and consumption sites that are interdependent. It is important to keep in mind the supply chain in each sector that connects the producer to the consumer at every stage.